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# THE PLANT DISEASE REPORTER

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Issued By

The Plant Disease Survey

Volume VIII Number 6

September 1, 1924

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY

Vol. VIII September 1, 1924 Number 6

## WESTERN YELLOW BLIGHT SEVERE ON TOMATOES IN THE WEST

Reports on yellow blight from three western states are given below. In the Utah report mention is made of the fact that the dryness of the season has promoted the disease. The accompanying table shows how dry it has been at Salt Lake City, and also at other stations where yellow blight occurs.

Table 3. Total weekly precipitations and departures from the normal from the week ending May 27 to that ending August 19, 1924, for Salt Lake City, Utah; Reno, Nevada; Walla Walla, Washington; and Fresno, California.

| Week ending | Precipitation | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Salt Lake City | | Reno | | Walla Walla | | Fresno | |
| | Total | Departure | Total | Departure | Total | Departure | Total | Departure |
| May 27 | 0.2 | -0.2 | T. | -0.1 | T. | -0.4 | 0. | -0.1 |
| June 3 | 0.9 | +0.5 | 0. | -0.1 | T. | -0.4 | 0. | -0.1 |
| June 10 | 0.1 | -0.2 | T. | 0. | 0.5 | +0.2 | 0. | -0.1 |
| June 17 | 0. | -0.2 | 0. | -0.1 | 0.1 | -0.2 | 0. | 0. |
| June 24 | 0.4 | +0.3 | 0. | -0.1 | 0.1 | -0.1 | 0. | 0. |
| July 1 | 0. | -0.1 | 0. | -T. | 0. | -0.3 | 0. | 0. |
| July 8 | 0.4 | +0.3 | T. | 0. | 0. | -0.2 | 0. | 0. |
| July 15 | 0. | -0.1 | 0. | T. | 0. | -0.1 | --- | --- |
| July 22 | 0. | -0.1 | 0. | -T. | 0.9 | +0.9 | 0. | 0. |
| July 29 | 0. | -0.1 | 0. | -0.1 | 0. | 0. | 0. | 0. |
| August 5 | 0. | -0.1 | T. | 0. | 0. | 0. | 0. | 0. |
| August 12 | 0. | -0.1 | 0. | -0.1 | 0. | -0.1 | T. | +T. |
| August 19 | 0.1 | -0.1 | 0. | -T. | 0.5 | +0.4 | 0. | 0. |
| Total | 2.1 | -0.2 | T. | -0.6 | 2.2 | -0.3 | T. | -0.3 |

Utah: The average loss for the state from this trouble will probably range this season between 20% and 25%. Not infrequently 30 and 40% of affected hills were observed and in occasional fields the outbreak exceeds even 50%. On the other hand fields were seen July 26-28 where the amount of the disease remained below 10% and sometimes even below 5%. Several instances were noted where blight was less prevalent on heavier

soils than on lighter soils. The present outbreak of western blight in Utah is undoubtedly more serious than that which is ordinarily observed in average years. Similarly to its geographical and seasonal prevalence in other sections of the country, its progress in Utah this season shows a close correlation with the exceptional climatic conditions of this season. Expressing the situation in one word, it is a much drier season. This dryness has manifested itself so far not only in lower precipitation, but also in greater wind movement, lower relative humidity, slightly higher temperature and a higher evaporation. These are exactly the factors which favor outbreaks of western blight in California. The situation, however, though very sad, especially in individual cases, is not alarming for these reasons: (1) The progress of the disease has reached its height, as indicated by (a) relatively few new cases in some fields; (b) occasional regeneration of slightly blighted plants in other fields and (c) expected trend of the weather conditions which are most likely to be milder from now on and less favorable to blight. (2) The extremely severe cases are exceptional, and in a few instances the appearance of the fields are even highly gratifying. (3) There is no evidence whatever that a severe outbreak this year will in any way influence the crop of the next year, or contaminate the soil, as in the case of wilt. (Shapovalov, July 26)

California: The most severe outbreak of the season has been observed at Shafter, California. It has developed there to the extent of 99.5% to fully 100%. Further south, at Bakersfield it has been noted in amounts up to 50%. The next section, probably is Riverside where damages reached 40 to 50%. In the San Fernando Valley a similar high maximum of western blight has been observed, but only in exceptional cases; mostly the outbreak is mild. Very little of the disease has appeared so far in the Manteca section, usually not exceeding 1% and in Santa Clara Valley. Only one instance has been noted in Santa Cruz County where western blight developed to the extent of 10%, and it is usually less than 5% and a number of fields have less than 1%. The disease has shown also in small quantities in the Imperial and the Coachella Valleys toward the end of their growing season (latter part of April). It has been very exceptional in the coastal sections of San Diego, Orange and Los Angeles counties. (Shapovalov, August 10)

Washington: Very widespread and very serious this season. Many plantings have 50% or more of the plants involved. Cultural practices do not seem to have any influence on the amount of disease present. (Dana, August 15)

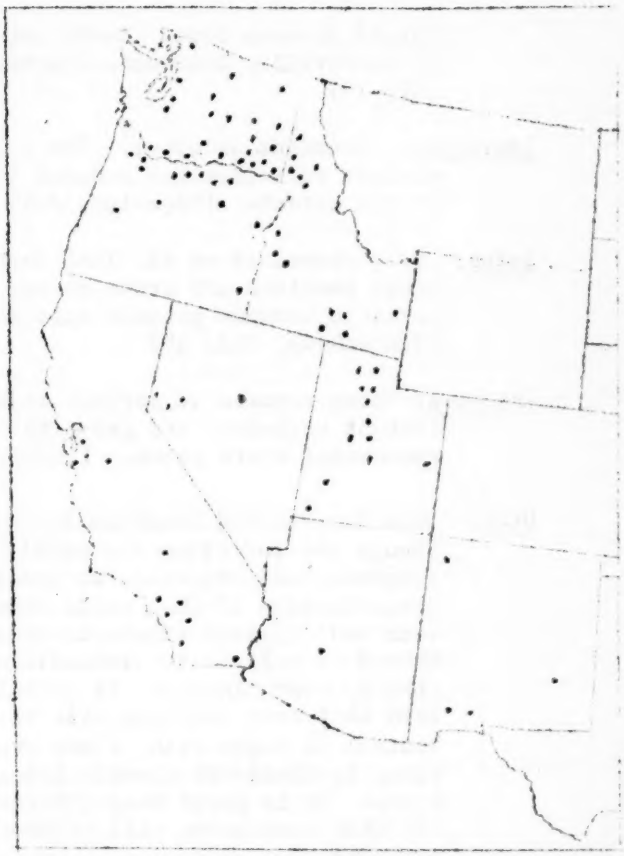

Fig. 7. Distribution of western yellow blight of tomato, as it has been reported to the Survey, 1903-1924. Each dot represents a county from which the disease has been reported.

FUSARIUM WILT OF TOMATO

On account of confusion with western yellow blight and other diseases little has been known concerning the true distribution and importance in the West of the Fusarium wilt caused by Fusarium lycopersici. The following Utah and California notes furnished by Shapovalov are therefore particularly interesting.

Kentucky: About 1% of the plants in commercial plantings affected. A maximum of 15% has been observed in new tomato land. The severely infected areas have been discarded for commercial plantings. (Gardner, August 15)

South Carolina: Found on campus at Clemson College. No reports of damage in commercial sections. (Moore, July 15)

Mississippi: Date of first report May 10, A. & M. College, Mississippi. Also reported from Copiah and Marshall. Collected also at Sturgis, Mississippi, Oktibbeha County. Damage

slight in each case. Heavy infection observed in garden at Starkville, Oktibbeha County, July 4. (Neal and Wallace, July 15)

Louisiana: Abundant as usual. The rather general use of resistant varieties has reduced the complaints to a considerable extent. (Edgerton, July 15)

Texas: Very prevalent on old land where no rotation is practiced. Where tomatoes are grown on new land or land previously devoted to Bermuda pasture wilt is of little importance. (Taubenhaus, July 15)

Arkansas: Many reports of serious injury are being received. Resistant varieties are grown to a limited extent and are successful where grown. (Young, August 1)

Utah: This disease was found in the majority of fields visited. Though the infection was mostly slight or medium, both in symptoms and percentage in individual fields, yet this contamination of Utah soils should be regarded as very serious and requires immediate measures to prevent its further spread as well as the intensification of infection in fields already contaminated. It is believed by the State specialists that crop rotation will be the most desirable means of control to begin with, since even Norton under Utah conditions is disadvantageously late, according to their experience. It is hoped that a variety which is more suitable for Utah conditions will eventually be developed. (Shapovalov, July 26)

Commercial tomato growers in Utah have used plants this season from three different sources: (1) home grown; (2) grown in California, and (3) grown in Georgia. So far as western yellow blight is concerned the source of plants can hardly be expected to play any role in its prevalence. As to Fusarium Wilt the fungus may of course be brought from seed beds to uncontaminated soils, but under the conditions of the present casual survey it has not been possible to establish definitely that such has been the case with some of the plants grown outside the state. At any rate, wherever the plants are grown there must be some insurance against the introduction of serious infectious diseases with the plants. State authorities are directing their efforts toward this end. (Shapovalov, July 26-28)

California: Fields that showed a very high percentage of infection last year are not planted to tomatoes this year. This season only one field has been observed where a slight to medium

stage of the disease was present on nearly all the plants in the field (near Centerville). This field was in tomatoes two years ago. Santa Cruz County soils now planted to tomatoes are remarkably free from the infection with Fusarium. Of 10 fields surveyed by the writer in that section recently, none showed a single plant suffering from this particular disease. Plants for all these fields were raised by H. A. Hyde Co., showing that the seedbeds of this concern are likewise free from infection. Slight to moderate amount of infection may be observed in every tomato growing locality from San Jose and Stockton south, including the early sections of Imperial and Coachella Valley. Norton is becoming more popular wherever Stone is grown at present because of its resistant qualities and is being used in cases when rotation is not practicable or impossible. (Shapovalov, August 10)

TOMATO LEAF BLIGHT CAUSED BY SEPTORIA LYCOPERSICI

Connecticut: No complaints yet. (Clinton, August 15)

Kentucky: Beginning to show up badly in most commercial fields. One field cut 66% by defoliation and consequent scalding of fruit. Leaf mold and leafspot will probably damage the crop 50%. (Gardner, August 15)

Texas: Very prevalent causing firing on foliage exposing fruit to sunburn. (Taubenhaus, July 15)

Arkansas: Few reports of this trouble received. A few specimens sent in showed severe injury. (Young, August 1)

Illinois: Septoria leafspot is doing great damage. One field at Monmouth was almost defoliated. Garden patches have frequently showed serious damage. (P. A. Young, August 17)

Minnesota: Light infections reported from Ramsey and Itasca Counties. (Dept. of Plant Pathology, August 15)

Iowa: General in gardens throughout the state. Especially severe in southeastern Iowa in the truck section. Reduced yield about 15%. (Porter, August 15)

Nebraska: Much more prevalent than usual, causing considerable damage in small fields.

TOMATO MOSAIC

Connecticut: Have seen less than usual. (Clinton, August 15)

New Jersey: The mosaic is prevalent in many fields on both early and late varieties. In comparison to the past two years, it is equally as serious. (Poole, July 12)

Kentucky: Mr. Gardner reports what appears to be a rugose mosaic on about 65% of plants in commercial plantings and about 10% of distinct mottled mosaic in the same fields. The mottled mosaic is more injurious than the rugose. (Valleau, August 15)

South Carolina: Found in localized areas in state. Only a few plants infected in any case. Damage slight. (Moore, July 15)

Mississippi: Reported in May on the horticultural grounds at A. & M. College. Also observed in June at Vossburg, Jones County. Damage slight. (Neal, July 15)

Louisiana: Quite serious in some sections. (Edgerton, July 15)

Minnesota: Generally present. (Dept. of Plant Pathology, August 15)

Iowa: Common over Iowa. (Porter, August 15)

Nebraska: Much more serious than usual and causing considerable loss. Mosaic spread could be correlated with insect infestation during wet weather. (Goss, August 1)

Utah: Mosaic of tomatoes appears to be generally scattered in various sections of the state, though not many serious cases were observed. It is the object of the State Experiment Station experts to determine definitely the losses due to this disease and also the wild hosts carrying the infectious virus over winter. (Shapovalov, July 26)

Washington: Two reports in greenhouse tomatoes. (Dana, August 15)

California: Generally distributed, but in extremely varying amounts and manifestations. This variation has not yet been connected with any known factor. (Shapovalov, August 10)

## THE GRAND RAPIDS DISEASE OF TOMATO

Caused by Aplanobacter Michiganense EFS.

The Grand Rapids disease of tomatoes first described from Michigan in 1909 has now been reported from New York, Massachusetts, Pennsylvania, New Jersey, Connecticut, Ohio, Indiana and Iowa, on tomatoes in the field and in hothouses. As the disease is not well known, it may exist in other states but be confused with other wilts of tomato.

This disease is characterized in early stages by a one-sided wilting of leaves, leaflets on one side being perfectly turgid while those on the other are flaccid or even dried up. Later, pale streaks may appear along the line

of infection on stems, which often crack open along this line. The interior of the stem in early stages shows whitish spots in the region of the vascular ring, but in later stages there is a yellow or yellow-brown discoloration, not so dark as with Bacterium solanacearum. Often the whole pith and cortex is involved with distinct cavities, especially on the upper tender parts. In the more advanced stages the whole plant is wilted. It is a much slower acting disease than the wilt caused by Bacterium solanacearum.

It is desired to determine the geographical distribution of this disease, and work to this end is being done in the Laboratory of Plant Pathology, Department of Agriculture in Washington, where identifications will gladly be made. Specimens and information should be sent to Mary K. Bryan, Assistant Pathologist, Room 302, Bureau of Plant Industry.

## BACTERIAL WILT OF TOMATO - BACTERIUM SOLANACEARUM

South Carolina: Found in localized areas. Only a trace found in trucking section. (Moore, July 15)

Mississippi: Reported in June from Wayne and Stone Counties. Damage rather serious in each case. (Neal, July 15)

Louisiana: Saw a few plants in some fields. (Edgerton, July 15)

## BLOSSOM END ROT OF TOMATOES

Connecticut: Considerable injury to certain varieties, due to dry weather. (Clinton, August 15)

Kentucky: Less than usual possibly due to moist season. (Gardner, August 15)

Mississippi: Date of first report May 28, Crystal Springs. Also reported in June and July at A. & M. College and Starkville. On the whole the disease is not as serious as last season. (Neal and Wallace, July 15)

Arkansas: Reported rather commonly. Causes appreciable loss. (Young, August 1)

Washington: Present in the usual amount and severity. (Dana, August 15)

## LEAF MOLD SERIOUS ON OUTDOOR TOMATOES IN KENTUCKY

Kentucky: Has been present in many fields about 6 weeks. Has reduced yield in about one-third of the fields observed about 25%. Where leaf mold appeared first the leafspot has not developed extensively. (Gardner, August 15)

## WHAT IS THE DISTRIBUTION OF THE BACTERIAL WILT OF BEANS?

The only state from which bacterial wilt (Bacterium flaccumfaciens) of bean has been reported to the Survey this year is Michigan, where C. H. Coons reports it on July 15 as less severe in the fields at Michigan Agricultural College than in 1923 when it was of considerable importance.

The disease was first described in 1922 by Miss Florence Hedges of the U. S. Department of Agriculture from South Dakota, and later she isolated the organism from seed secured in Michigan, South Dakota, Montana, Maryland, and the District of Columbia, and from France and Germany. How widely does it really occur in this country and how important is it? These are questions concerning which more information is needed and collaborators are requested to assist in answering them by sending in reports and specimens. The following statement by Miss Hedges will be of assistance in diagnosis:

> "At this time of year it is most easily detected on the seeds of the white-seeded varieties, which, when badly infected, are bright yellow due to a layer of yellow bacterial slime beneath the seedcoat and shining through it."

## SOME RECENT NOTES ON TOBACCO DISEASES

### Black fire caused by Bacterium angulatum

Kentucky: Due to the wet period which continued until about two weeks ago, this disease is very prevalent in most sections of the state. The tobaccogrowers in the western part of the state are very much concerned as to whether it is worth while continuing to care for the fields or not. Very little wild fire is present. Sanitary precautions including seed treatment as a means of control have utterly failed. The indications are that this disease is carried within the seed and cannot be reached by seed treatment in all cases. (Valleau, August 1)

Florida (Gadsden County): Black fire was more prevalent than last year. No infected beds were observed. Some fields showed severe infection, while others set with plants from same bed were free from the disease. Nothing learned of source of infection. (Tisdale)

### Wild fire caused by Bacterium tabacum

South Carolina: Found in two counties. Confined to localized areas. One field of forty acres badly damaged. (Moore, August 1)

Florida: There was much less seed bed infection this year than last and consequently less injury in the field. All beds which were steamed and seed treated were free from the disease. Second-hand Connecticut cloth was steamed. (Tisdale)

Leafspot caused by Cercospora nicotianae

South Carolina: General on all fields. More severe this season than normally due to rainy weather. (Moore, August 1)

Florida: Frog-eye was less common and caused slighter damage of minor importance. (Tisdale; - Gadsden County)

Black root caused by Thielavia basicola

Kentucky: Due evidently to the cool wet spring black root rot is worse than usual. In severely infected fields plants have not yet started to grow. A test of several local strains of black tobacco indicates that they are all quite highly susceptible in a year like this. (Valleau, August 1)

Florida: On account of late setting root-rot was of minor importance, except on old badly infested shades. (Tisdale)

Root-rot caused by Fusarium sp.

Kentucky: Tobacco in many sections of Kentucky is very irregular in size and in many fields in the Burley section tobacco is only just beginning to grow although set at the usual time. The root systems of these plants nearly always show severe injury, most of the new rootlets being dead and replaced by others giving a somewhat bushy appearance to the root system. Although this trouble has previously been observed it seems decidedly more prevalent than usual. Isolations from rotting roots have given several species of Fusaria some of which are quite pathogenic. Abundant moisture and lower soil temperatures than usual seem to have favored the disease. (Valleau, August 1)

Black shank caused by Phytophthora nicotianae

Florida: Black shank appeared in many new localities of the county and caused a total loss to Connecticut Round Tip tobacco even in cases where no signs of the disease were noted last year. (Tisdale)

Mosaic

Florida: Only a few fields showed mosaic this year and in most cases then only on the sucker leaves. (Tisdale, Gadsden County)

Root-knot caused by Heterodera radicicola

Florida: Root-knot was rather common this year and caused considerable injury in some fields as stunting the plants. This disease was common on bright and cigar wrapper tobacco. (Tisdale - Gadsden County)

## REPORTS ON PEACH DISEASES

Brown rot caused by Sclerotinia cinerea

South Carolina: Loss heavy on Mayflower, which ripened during a period of moist weather, but light on Belle of Georgia and Elberta, which are ripening in a period of dry weather. Data for above statement from local observations only. (Ludwig, August 15)

Arkansas: Very prevalent on unsprayed or poorly sprayed peaches. (Young, August 15)

Ohio: General, average or less, except possibly a bit more twig-blight form than usual. (Hesler, July 15)

Scab caused by Cladosporium carpophilum

New Jersey: First observed in South Jersey on June 20. (Dept. of Plant Pathology, July 1)

Kentucky: Very common everywhere on unsprayed trees, but is being controlled nearly 100% by a single spray of self-boiled lime sulfur when the fruit is about 3/4 inches in diameter. (Valleau, August 15)

South Carolina: Present but negligible this year so far as all present records show. (Ludwig, August 15)

Mississippi: Date of first report March 21, Newton County. Heavy infection on nursery stock. Also reported on July 15 from Washington County. Damage moderate on bearing trees. (Barker and Wallace, July 1)

Texas: Very prevalent causing fruit to be black in appearance. 1% loss. (Taubenhaus, July 1)

Arkansas: Very prevalent where orchards are not properly sprayed. (Young, August 15)

Ohio: Several complaints and inquiries with reference to scab on twigs. Also observed to a considerable extent on fruit. (Hesler, August 1)

Bacterial shot hole caused by Bacterium pruni

New York: Bacterial shot hole on peaches getting bad. (Palmer, August 11 - Orleans County)

West Virginia: Developing particularly upon Salway peaches in variety orchard. (Giddings, August 15)

Kentucky: Present in most orchards but injurious to only an occasional tree in well cared for orchards. Injurious sometimes to the weaker trees. (Valleau, August 15)

South Carolina: Apparently less serious than usual in the vicinity of the college, but a case of serious injury in a 20-acre orchard in Chesterfield County makes it seem that for the state as a whole it may be rather more severe. (Ludwig, August 15)

Arkansas: Common in many poorly kept orchards. (Young, August 15)

Ohio: Rather general over state, but confined in its injurious phases to orchards somewhat neglected. In one typical case, the orchard not cultivated, trees showing many cankers and leaf injury. No fruit lesions observed to date. (Hesler, July 15)

## ALFALFA NEMATODE FOUND IN UTAH

"I regret to have to report the occurrence of the alfalfa nematode in Utah. I found the first specimens in Salt Lake County and subsequently picked up the disease in four out of five fields visited in the area. Its general occurrence in these fields leads me to predict its more or less general distribution in the state and further that it has been at least one factor in the short life of the alfalfa crop." (B. L. Richards, August 6)

Specimens from these fields were examined independantly by Messrs. Thorne and Steinert of the Office of Agricultural Technology who verified the determination of the nematode, Tylenchus dipsaci.

## NOTES

Crown gall (Bacterium tumefaciens) has, according to Moore, destroyed a 44-acre peach orchard near Bennettsville, in Marlboro County, South Carolina. Such heavy loss does not occur often, however. (Ludwig)

Bacterial leafspot of cowpea caused by Bacterium vignae Gardner, was very common this year in the vicinity of Quincy, Florida, on white peas for table use and on the field varieties for hay. In some cases it caused the leaves to shed badly. (Tisdale)

The first dry rot (Diplodia zeae) of corn reported in Iowa this year was observed on August 12 at Wapello, according to D. R. Porter. By August 15 it had been seen generally distributed over the state.

Rhizoctonia crocorum causing stem rot of alfalfa was found in a field near Dowagiac, Cass County, Michigan. The affected areas were on the slope of a hill. Kotila states that this is the second report of the occurrence of this fungus on alfalfa in Michigan.

Hungerford reports that the first infections of stripe rust (Puccinia glumarum) on barley noted in Idaho since 1915 were found on several varieties in the barley nursery at the Experiment Station.

Bunt (Tilletia tritici) is again very severe in Idaho this year. Infection in treated fields runs from 5 to 50 percent. Several smut explosions have been reported. (Hungerford)

A leafspot caused by a fungus identified by L. O. Overholts as Cercospora davisii was observed on July 3 to be common on white sweet clover along roadsides in Tioga County, Pennsylvania, according to Kirby. P. A. Young reports that the Cercospora leafspot occurs on the lower leaves of most plants in most of the fields of this sweet clover in the southern half of Illinois, but he did not find it on yellow sweet clover in three fields in which it was mixed with infected white sweet clover.

Some areas in New Mexico are so badly infested with Fusarium niveum that the growing of watermelons on a commercial basis has been discontinued. (Crawford)

A case of fire blight (Bacillus amylovorus) on plum has been submitted to the Ohio Experiment Station at Wooster, Ohio.

Bean mosaic is unusually severe this year in parts of Idaho according to Hungerford. The disease is probably not more prevalent than usual but the damage is much more severe, as mosaic plants do not seem to withstand drought conditions as well as healthy plants.

Maple and beech trees were showing the effects of drought on August 19 in the vicinity of Burlington, Vermont according to Lutman.

Aster yellows has been reported more commonly than for several years in Wisconsin, according to R. E. Vaughan. Two gardners at Madison reported complete loss.

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